RYAN HASANGAPON PURBA

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PROFILE

Mechanical Engineering graduate (cum laude) with internships in manufacturing operations and plant maintenance, experienced in reverse engineering, CAD modeling and technical drawing (Autodesk Inventor, SOLIDWORKS), engineering calculations, finite element analysis (ANSYS) and failure analysis. Works well with engineers, vendors and international multidisciplinary teams.

EDUCATION

Universitas Sebelas Maret – Surakarta ***Aug 2022 – Jan 2026***
Bachelor of Engineering (S.T.), Mechanical Engineering | GPA 3.61/4.00 | Cum Laude, 7 semesters
Relevant Coursework: Machine Elements I & II, Engineering Drawing, Materials Science, Strength of Materials, Structural Statics, Dynamics, Mechatronics
Languages: Bahasa Indonesia (Native) | English (IELTS Academic 7.5; TOEFL ITP 610/677)

WORK EXPERIENCE

PT. HM SAMPOERNA Tbk ***Apr 2026 – Oct 2026***
Operations Intern – SKT Device Development Apprenticeship | Surabaya, Indonesia
- Learned Autodesk Inventor and company drawing standards in week one, coming from SOLIDWORKS.
- Built the tooling inventory, agreed the scope with Process Engineers and documented every item in it before the internship ended, personally measuring, modeling and drawing more than 100 of them.
- Reverse-engineered existing production tooling from caliper, rule, tape and protractor measurements into 3D models, assemblies and dimensioned 2D drawings, including molded and swept geometry.
- Designed an Excel tracker and timeline to plan own work and report weekly progress, remaining items, blockers and information needed to the supervisor and Process Engineers.
- Incorporated Process Engineer revisions and vendor drawings, published the approved references in Microsoft Lists as a shared reference across locations, and handed over the set with a file-location guide.
- Supported two training programmes in parallel: soft-skills training for group leaders at multiple sites (Mentimeter quizzes, activities, logistics) and a technical training programme (slides, AV, attendance).
- Built and presented the final presentation deck; received the certificate of completion.

Universitas Sebelas Maret ***Aug 2025 – Jan 2026***
Practicum Assistant Coordinator – Fundamental Mechanical Phenomena | Surakarta, Indonesia
- Guided about 150 students in small groups through forced-vibration experiments with a fellow assistant.
- Taught apparatus operation, procedures, data collection and calculations, reviewed students' reports, and updated the practicum procedure document used in the sessions.

PT. Bakrie Pipe Industries ***Jan 2025 – Feb 2025***
Maintenance Division Intern | Bekasi, Indonesia
- Assisted the maintenance crew with repairs on operating ERW steel-pipe production equipment, including chain and bearing replacement, alignment, lubrication and a crane-assisted heavy gearbox teardown.
- Investigated the line's most frequently failing component, a conveyor's RS60 roller-chain drive, through visual inspection, manual measurements and technical drawings.
- Calculated chain loads, service factor and rated power under shock loading and 16 hours of daily running: the chain was strong enough, but its rated capacity fell below the 2.2 kW motor output.
- Showed that drip and oil-bath lubrication would cut the service factor from 2.81 to 1.88 and 1.50, and recommended continuous lubrication with routine monitoring in the Kerja Praktik report and seminar.

PROJECTS

Undergraduate Thesis – Spur Gear Design Optimization ***Aug 2025 – Jan 2026***
Universitas Sebelas Maret | Supervisor: Dr. Eng. Ir. Aditya Rio Prabowo
- Analyzed how module (2, 3, 4 and 6 mm) and pressure angle (14.5° and 20°) affect contact-zone and tooth-root stress in an eVTOL tilt-rotor spur gear pair across eight variants in SOLIDWORKS and ANSYS.
- Verified the FEA setup against a published spur-gear study and Hertz calculations for three materials, each within the 10% threshold set for the method.

- Selected module 4 at 14.5° for the lowest contact-zone stress (428.83 MPa) with acceptable root stress, and produced detailed gear and pinion drawings with tolerances, fits and proposed material.

Tilt-Rotor Mechanism Design (GMDC Capstone Project), *USAID HEPI* ***Jan 2025 – May 2025***

International collaboration: UNS, ITB & Arizona State University

- Co-developed the tilt-rotor mechanism with one teammate in an eight-member team designing an electric VTOL air taxi for seven occupants, selecting a 2:1 spur-gear concept.
- Set up ground and hover load cases and evaluated bending, shear, tooth and contact stress for the shaft, gears, arms and M20 bolt group against a 1.5 factor of safety, proposing a material for each part.
- Coordinated design inputs with the Structures and Propulsion workstreams.
- Built the team's deck and presented the concept in English to ASU faculty, alumni and industry reviewers.

Digital Line-Following Robot (Mechatronics Course Project) ***May 2025 – Jun 2025***

Project Manager & Design Lead | *Universitas Sebelas Maret*

- Led a three-member team as Project Manager, running weekly coordination, dividing work across design, electronics and manufacturing, and compiling the final report.
- Designed the layered chassis in CAD around the Arduino, motor driver and sensors, guided it through fabrication, and traced trial oscillation to unstable sensor readings.

Folding Skateboard Design (Machine Elements Course Project) ***2024***

Team of three | *Universitas Sebelas Maret*

- Designed a longboard that folds at a central hinge in SOLIDWORKS, with material selection, drawings, hand strength checks for a 100 kg rider and a static study.

CAD & Engineering Drawing Collection ***2023***

Individual coursework and design work | *Universitas Sebelas Maret*

- Designed an original robotic arm with a gear-driven gripper (17 drawings) and drafted four more assemblies.

LEADERSHIP & ORGANIZATIONS

Bengawan Unmanned Vehicle Team UNS ***Dec 2024 – Dec 2025***

Research & Development – Grant Proposal Development | *Surakarta, Indonesia*

- Independently wrote the team's MBKM research grant proposal from its UAV-LiDAR research on detecting collapsed buildings after earthquakes; the proposal received funding.

Bengawan Unmanned Vehicle Team UNS ***Feb 2023 – Dec 2024***

Staff of Racing Plane Team (Programming & Ground Control Station Division) | *Surakarta, Indonesia*

- Configured ArduPilot on the Pixhawk flight controller, planned waypoints and missions in Mission Planner, maintained the telemetry link and prepared each flight with the pilots.
- Led Programming & Ground Control Station research in the second year: planned flight tests, tuned parameters, reviewed flight logs, and mentored and delegated research to a junior teammate.
- Took the initiative on recurring autonomous-takeoff failures outside the division's remit, configuring a partial pre-launch throttle in the flight controller that made launches reliable and unblocked flight testing.
- Selected as one of three members of the KRTI 2024 competition lineup; monitored telemetry, adjusted parameters and coordinated with pilots, with every competition takeoff successful and no crashes.

CERTIFICATIONS & AWARDS

3rd Place – Team-Based Project Competition ***Jul 2025***

49th Dies Natalis UNS

Kontes Robot Terbang Indonesia – Racing Plane Division ***Sep 2024***

Balai Pengembangan Talenta Indonesia (BPTI), Puspresnas

- Team awards with Bengawan UNS: 1st Place National | 1st Place Regional | Excellent Flight Award

SKILLS

- Professional: Project Coordination | Progress Tracking | Problem Solving | Team Leadership
- Technical: CAD & Drawing | Reverse Engineering | Engineering Calculations | FEA | Failure Analysis
- Software: Autodesk Inventor | SOLIDWORKS | ANSYS Static Structural | ArduPilot & Mission Planner | Microsoft Excel | Microsoft PowerPoint | Microsoft Word | Microsoft Lists